

Former Petrol Filling Station, Tuscany, Italy

In-Situ Enhanced Desorption of Petroleum Hydrocarbons



Remediation Details

Site Type:

Former Petrol Filling Station

Project Driver:

Reduce Unacceptable Risk of Contaminant Migration

Remediation Approach:

In-Situ Enhanced Desorption

Technologies:

PetroCleanze®, ORC-Advanced®

Summary

At a petrol station in Tuscany, historic leakages from underground storage tanks (USTs) resulted in significant TPH contamination of the soil and groundwater. During decommissioning works, the bulk of the contamination was removed by excavating the leaking tanks and immediate surrounding soil. However, significant residual TPH contamination (up to 10,000 µg/L) remained within the surrounding ground (HC>12 up to 2,000 mg/kg between 2.5 m and 3 m BGL), requiring further remediation.

Treatment

In a pilot test, RegenesiS’ PetroCleanze® was applied via three direct push injection points, rapidly desorbing the contamination bound to the soils in the heavily impacted ‘smear zone’. Following the application, PetroCleanze was left for a period of seven days to actively desorb the TPH into the groundwater from where it was subsequently recovered using a vacuum extraction truck. A total of two injection campaigns and vacuum truck phases were undertaken.

Based on the pilot test results, three full-scale PetroCleanze campaigns have been planned and will be performed in the main contaminated zone, to effectively desorb and recover the hydrocarbons bound to the aquifer soil matrix. Once the secondary source is removed, a full-scale enhanced aerobic bioremediation approach will be taken using ORC-Advanced®, as a final polishing step.

What’s Special?

Stand-alone excavation was unable to remove all the contamination bound to the soil. PetroCleanze desorbs bound contamination into solution, allowing for physical extraction of the desorbed mass, achieving consistent results within a few months, dramatically increasing the efficacy of standard recovery systems.

Geology

	Bedrock
	Gravel
X	Sand (fine)
	Silt
	Clay

Medium

X	Groundwater
X	Saturated Soil
	Vadose Zone

COC

X	Petro HCs
	Petro LNAPL
	Chlorinated VOCs
	Metals

COC Concentration Levels:

TPH up to 10.000 µg/L

Treatment Depth:

between 2 and 4 m BGL

Treatment Area:

approx. 10 m²

Injection Grid:

2.5 m X 2.5 m